DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/23/2009 has been entered.

The examiner acknowledges the receipt of the applicants' arguments/ remarked dated 12/23/2009. Claims 1-8 cancelled, claims 9-16 pending.

Rejections and objections made in previous office action that do not appear below have been overcome by applicant's amendments and therefore the arguments pertaining to these rejections/objections will not be addressed.

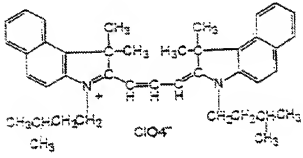
Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

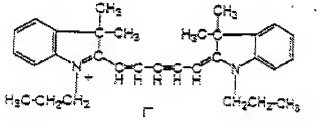
2. **Claims 9-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (GB2349388) in view of Namba (5,506,357).**

3. **Regarding Claims 9 and 13**, Kobayashi discloses a blue color filter containing a first colorant represented by the following structural formula (1) with a ClO_4^- anion (page 5).



(1)

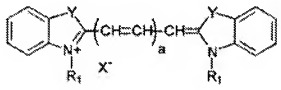
A photosensitive resin (binder resin) (page 7, paragraph 1) and a second colorant represented by the following structural formula (2) (page 6).



(2)

Kobayashi also indicates that when a phthalocyanine dye like formula (1) is used alone large deviations from the desired hue can be caused (page 4) and a color mixture of different dyes is selected to suppress undesirable light transmission to improve the color purity (page 5).

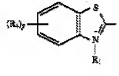
The second colorant claimed by the applicant (shown below, structure 3) differs from the second colorant disclosed by Kobayashi (shown above, structure 2) in that the applicant claims the Y position is substituted with sulfur or oxygen and Kobayashi discloses only alkyl substitution in the Y position.



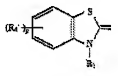
(3)

Namba discloses cyanine dyes with various substitutions in the Y position. Namba discloses that cyanine dyes are used in applications that include: silver halide photographs, dye lasers, optical recording media, and electrophotographic sensitizers (Column 1, lines 24-27).

Representative cyanine dyes are shown below:



(4)



(5)

Structures 4 and 5 shown above represent cyanine dyes with a sulfur atom substituted at the Y position as claimed by the applicant. While one may argue that Namba is from a different field of endeavor because the use of the dye is different. The examiner would disagree, because of the way a chemist works. One working in the art looks at the material that they are working with in this case Kobayashi, and then looks though the art as a whole looking for analogous dye structures (using a structure search) to see

what related structures have been made. Namba clearly demonstrates that cyanine dyes with a sulfur atom in the Y position was known in the art at the time of the invention.

With a reasonable expectation of success, a person of ordinary skill in the art could readily replace the cyanine dye claimed Kobayashi with the cyanine dye disclosed by Namba since both are cyanine dyes and one would expect that they would behave in a similar fashion or to have constructed the dye taught by Kobayashi with a sulfur in the number 3 position on the ring instead of a carbon as taught by Namba since analogous dye structures have that type of substitution.

These merely involves the substitution of one cyanine dye for another. Namba shows that dyes of the claimed type were known at the time the invention was made.

Thus, evidence of similar properties or evidence of any useful properties disclosed in the prior art that would be expected to be shared by the claimed invention weighs in favor of a conclusion that the claimed invention would have been obvious. Dillon, 919 F.2d at 697-98, 16 USPQ2d at 1905; In re Wilder, 563 F.2d 457, 461, 195 USPQ 426, 430 (CCPA 1977); In re Linter, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972).

Kobayashi does not mention the anions used for the second colorant.

Namba discloses that generally cyanine dyes are coupled with anions such as, ClO_4- (column 4, lines 7-8) which is included in the list of anions listed by the applicant.

Kobayashi and Namba fails to mention that the first colorant and the second colorant are completely dissolved in the binder resin.

The applicant claims the first colorant and the second colorant are completely dissolved in the binder resin.

The examiner notes that on page 7 of applicants' specification a means for achieving the pigment dispersion is described as mixing a binder resin with a blue pigment dispersion containing a copper phthalocyanine blue, a cyanine type (pigment), an organic solvent [a pigment derivative for dispersion stabilization (added if necessary)] and a dispersant to form a fine dispersion of the pigment and stabilization is affected using a disperser such as a sand mill. As a result, the transmission of light in a wavelength region of 500 to 550 nm can be suppressed, and hence the color purity can be improved (page 8).

Kobayashi discloses a pigment dispersion is achieved by mixing a photosensitive resin (binder resin) (page 7) with a blue pigment dispersion containing a finely dispersing and stabilizing copper phthalocyanine blue, a cyanine type (pigment), an organic solvent containing a pigment derivative (if necessary) and a dispersing agent using a disperser such as a sand mill. Kobayashi discloses the use of a transparent substrate and a transparent photosensitive (photopolymerizable) resin (page 13). Kobayashi also discloses that the transmission of light in a wavelength region of 500 to 550 nm can be suppressed, and hence the color purity can be improved (page 7).

As both Kobayashi/Namba and the applicant use similar pigments mixed with a transparent photopolymerizable resin, solvent-dispersant (if necessary) with stabilization affected by a disperser such as a sand mill, the pigments used by Kobayashi/Namba would also by expect to be completely soluble and meet the claim limitations.

4. **Regarding Claims 10, 12, 14 and 16**, Kobayashi teaches an electroluminescent device (organic EL device) containing an organic light emitting layer (page 14) and a blue color filter (page 6). Kobayashi teaches that the layers are formed by a lamination process (page 14 and 15).

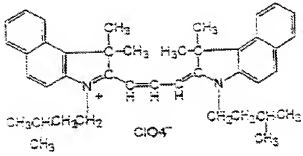
5. **Regarding Claims 11 and 15,** Kobayashi and Kamba does not mention the role of the disclosed counter ions as claimed by the applicant shown below:

- a quencher anion that fluorescence from the first colorant or the second colorant

It is common in the art to introduce counter ions (anions) into the cationic device dye structures such that local charge neutrality (cationic dye + anion = neutral ionic dye) is preserved and the subsequent electroluminescence results in higher color purity by preventing interaction between the electroluminescence light and the cationic dye as the light passes through the color filter. The anions disclosed by Kobayashi would therefore function as quenching anions and read on the instant claim.

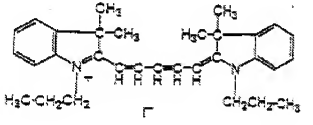
6. **Claims 9, 11, 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (GB2349388) in view of Tang (US 4, 769,292).**

7. Regarding Claims 9 and 13, Kobayashi discloses a blue color filter containing a first colorant represented by the following structural formula (1) with a ClO_4^- anion (page 5).



(1)

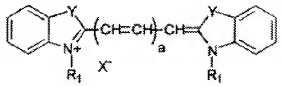
A photosensitive resin (binder resin) (page 7, paragraph 1) and a second colorant represented by the following structural formula (2) (page 6).



(2)

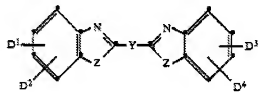
Kobayashi also indicates that when a phthalocyanine dye like formula (1) is used alone large deviations from the desired hue can be caused (page 4) and a color mixture of different dyes is selected to suppress undesirable light transmission to improve the color purity (page 5).

The second colorant claimed by the applicant (shown below, structure 3) differs from the second colorant disclosed by Kobayashi (shown above, structure 2) in that the applicant claims the Y position is substituted with sulfur or oxygen and Kobayashi discloses only alkyl substitution in the Y position.



(3)

Tang discloses an electroluminescent device that contains a fluorescent material (abstract). The fluorescent materials include fluorescent dyes and cyanines are presented as an example (column 13, lines 35-37). Tang discloses that the cyanines dyes are represented by the compound of generic formula 6:



Formula 6

Tang also discloses a specific cyanines dye where Z = S and the ammonium salts has a $CiO4^-$ counter ion in formula 7:

Formula 7

Tang clearly teaches cyanine dyes that read directly on the applicants' formula 3 were known at the time of the invention and used in electroluminescent devices.

It would have been obvious to a person of ordinary skill at the time of the invention to have selected from known cyanine dyes used in electroluminescent devices

which would have included those taught by Tang which read on the applicants' formula 3.

Kobayashi and Tang fail to mention claims the first colorant and the second colorant are completely dissolved in the binder resin.

The applicant claims the first colorant and the second colorant are completely dissolved in the binder resin.

The examiner notes that on page 7 of applicants' specification a means for achieving the pigment dispersion is described as mixing a binder resin with a blue pigment dispersion containing a copper phthalocyanine blue, a cyanine type (pigment), an organic solvent [a pigment derivative for dispersion stabilization (added if necessary)] and a dispersant to form a fine dispersion of the pigment and stabilization is affected using a disperser such as a sand mill. As a result, the transmission of light in a wavelength region of 500 to 550 nm can be suppressed, and hence the color purity can be improved (page 8).

Kobayashi discloses a pigment dispersion is achieved by mixing a photosensitive resin (binder resin) (page 7) with a blue pigment dispersion containing a finely dispersing and stabilizing copper phthalocyanine blue, a cyanine type (pigment), an organic solvent containing a pigment derivative (if necessary) and a dispersing agent using a disperser such as a sand mill. Kobayashi discloses the use of a transparent substrate and a transparent photosensitive (photopolymerizable) resin (page 13). Kobayashi also discloses that the transmission of light in a wavelength region of 500 to 550 nm can be suppressed, and hence the color purity can be improved (page 7).

As both Kobayashi/Tang and the applicant use similar pigments mixed with a transparent photopolymerizable resin, solvent-dispersant (if necessary) with stabilization affected by a disperser such as a sand mill, the pigments used by Kobayashi/ Tang would also by expect to be completely soluble and meet the claim limitations.

8. **Regarding Claims 11 and 15**, Kobayashi and Tang does not mention a quencher anion that that shows fluorescence from the first colorant or the second colorant

Kobayashi and Tang disclose some representative anions that are claimed by the applicant such as ClO_4^- for Formula 1 and Cl^- for formula 7. The anions disclosed by Kobayashi and Tang would therefore function in the same capacity as a quencher anion for fluorescence from the first colorant or the second colorant.

Response to Arguments

The applicant argues that Kobayashi doses not disclose using blue color filters that are completely dissolved in a binder resin nor offer equivalent improved color purity.

The examiner counters that the prior art teaches blue color filters made for compounds that read on applicants' formula(s) 1 and 2. Kobayashi discloses a method of dispersing the color filters in the binder resin than is identical to the applicants' and Kobayashi also uses a transparent photopolymerizable resin (binder resin). Solubility is viewed as an inherent physical property that would be affected by the solvent used. A

person of ordinary skill in the art would through routine experimentation determine a suitable solvent to disperse the colorant in the binder resin. Moreover, the color filter of Kobayashi also blocks transmission at 500 to 550 nm.

It would have been obvious to a person of ordinary skill in the art at the time of the invention to have achieved complete solublization of the color filter in the binder resin by adding a solvent in which the color filter material had sufficient solubility to aid in dispersion.

The combined teaching of Kobayashi with Namba and with Tang show that the color purity improvement in the same region using similar colorants and a transparent photopolymerizable resin mixed with a solvent was known at the time of the invention.

The comparative examples on pages 9-13 shows color purity differences based on solubility. The examiner maintains that a person of ordinary skill in the art would through routine experimentation determine a suitable solvent to disperse the colorant in the binder resin to achieve the same or similar results.

Conclusion

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREGORY CLARK whose telephone number is (571)270-7087. The examiner can normally be reached on M-Th 7:00 AM to 5 PM Alternating Fri 7:30 AM to 4 PM and Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art Unit 1794

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